

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-9. (canceled)

10. (currently amended) A method of software loading and initialization in a distributed network of nodes, the method comprising:

persistently storing, in a first storage of a master node, a plurality of software packages and a plurality of boot images, wherein the plurality of software packages and the plurality of boot images will be used by the nodes in the distributed network;

persistently storing, in a second storage of the master node, software version information and node type information for each node in the distributed network;

receiving, at the master node, a request for a boot image and software packages from a node, in the distributed network, that is performing an initial boot;

based on the request, the master node determining software version information of the node to retrieve from the second storage;

the master node retrieving the software version information of the node from the second storage;

the master node determining, based on the software version information of the node, a boot image of the plurality of boot images and one or more software packages of the plurality of software packages to extract from the first storage;

the master node extracting the boot image and the one or more software packages from the first storage;

delivering, to the node, the boot image and the one or more software packages;

wherein said node:

(a) stores the boot image and the one or more software packages in its local persistent storage,

(b) extracts software version information from the one or more software packages and stores the software version information in the local persistent storage,

(c) reboots and executes the boot image stored in the local persistent storage, and

(d) verifies the software version information with said master node;

if said node does not have the correct software versions, then the master node retrieving correct software packages from the first storage and sending the correct software packages to said node, wherein said node stores the correct software packages in the local persistent storage and completes booting by executing the correct software packages stored in the local persistent storage.

11. (canceled)

12. (previously presented) A method as recited in Claim 10, wherein said node, based on a command from said master node, does not store the one or more software packages in its local persistent storage device, allowing said master node to download test software packages to said node and temporarily run said node using the test software packages, and wherein when said node reboots, the test software packages will no longer exist on said node.

13. (canceled)

14. (currently amended) A method as recited in Claim [[13]] 10, wherein if said node has the correct software versions, then said node completes booting by executing the one or more software packages stored in the local persistent storage.
15. (canceled)
16. (original) A method as recited in Claim 10, wherein the master node has the ability to categorize nodes into classes where all of the nodes in a particular class of nodes have the same software configuration and may have differing processor types.
17. (previously presented) A method as recited in Claim 10, wherein each of the one or more software packages contains version information, dependency information, and other metadata information pertaining to software in the package.
18. (previously presented) A method as recited in Claim 10, wherein the boot image is customized for a particular type of node and provides basic low-level communications.
19. (previously presented) A method as recited in Claim 10, further comprising:
executing a composite image, that is installed by a user onto said master node, to create a
subset of the plurality of boot images, a subset of the plurality of software
packages, and node information; and
placing the subset of the plurality of boot images and the subset of the plurality of
software packages in the first storage and the node information in the second
storage.

20. (previously presented) A method as recited in Claim 10, wherein the master node retrieving the software version information creates the software version information from the second storage based on functional features included in the request.
21. (currently amended) A computer-readable storage medium carrying one or more sequences of instructions for software loading and initialization in a distributed network of nodes, which instructions, when executed by one or more processors, cause the one or more processors to perform:
- persistently storing, in a first storage of a master node, a plurality of software packages and a plurality of boot images, wherein the plurality of software packages and the plurality of boot images will be used by the nodes in the distributed network;
 - persistently storing, in a second storage of the master node, software version information and node type information for each node in the distributed network;
 - receiving, at the master node, a request for a boot image and software packages from a node, in the distributed network, that is performing an initial boot;
 - based on the request, the master node determining software version information of the node to retrieve from the second storage;
 - the master node retrieving the software version information of the node from the second storage;
 - the master node determining, based on the software version information of the node, a boot image of the plurality of boot images and one or more software packages of the plurality of software packages to extract from the first storage;

the master node extracting the boot image and the one or more software packages from
the first storage;

delivering, to the node, the boot image and the one or more software packages,

wherein said node:

(a) stores the boot image and the one or more software packages in its local
persistent storage,

(b) extracts software version information from the one or more software packages
and stores the software version information in the local persistent storage,

(c) reboots and executes the boot image stored in the local persistent storage, and

(d) verifies the software version information with said master node;

if said node does not have the correct software versions, then the master node retrieving
correct software packages from the first storage and sending the correct software
packages to said node, wherein said node stores the correct software packages in
the local persistent storage and completes booting by executing the correct
software packages stored in the local persistent storage.

22. (canceled)

23. (previously presented) A computer-readable storage medium as recited in Claim 21,
wherein said node, based on a command from said master node, does not store the one or
more software packages in its local persistent storage device, allowing said master node
to download test software packages to said node and temporarily run said node using the
test software packages, and wherein when said node reboots, the test software packages
will no longer exist on said node.

- 24. (canceled)
- 25. (currently amended) A computer-readable storage medium as recited in Claim [[24]] 21, wherein if said node has the correct software versions, then said node completes booting by executing the one or more software packages stored in the local persistent storage.
- 26. (canceled)
- 27. (previously presented) A computer-readable storage medium as recited in Claim 21, wherein the master node has the ability to categorize nodes into classes where all of the nodes in a particular class of nodes have the same software configuration and may have differing processor types.
- 28. (previously presented) A computer-readable storage medium as recited in Claim 21, wherein each of the one or more software packages contains version information, dependency information, and other metadata information pertaining to software in the package.
- 29. (previously presented) A computer-readable storage medium as recited in Claim 21, wherein the boot image is customized for a particular type of node and provides basic low-level communications.

30. (previously presented) A computer-readable storage medium as recited in Claim 21, further comprising:

executing a composite image, that was installed by a user, to create a subset of the plurality of boot images, a subset of the plurality of software packages, and node information; and

placing the subset of the plurality of boot images and the subset of the plurality of software packages in the first storage and the node information in the second storage.
31. (previously presented) A computer-readable storage medium as recited in Claim 21, wherein the master node retrieving the software version information creates the software version information from the second storage based on functional features included in the request.
32. (currently amended) An apparatus of software loading and initialization in a distributed network of nodes, comprising:

a master node;

a first storage on said master node for persistently storing a plurality of software packages and a plurality of boot images that the nodes in the distributed network will use;

a second storage on said master node for persistently storing software version information and node type information for each node in the network;

means for receiving a request for a boot image and software packages from a node, in the distributed network, that is performing an initial boot;

means for the master node determining, based on the request, software version

information of the node to retrieve from the second storage;

means for the master node retrieving the software version information of the node from
the second storage;

means for the master node determining, based on the software version information of the
node, a boot image of the plurality of boot images and one or more software
packages of the plurality of software packages to extract from the first storage;

means for the master node extracting the boot image and the one or more software
packages from the first storage; and

means for delivering, to the node, the boot image and the one or more software packages,
wherein said node:

(a) stores the boot image and the one or more software packages in its local
persistent storage,

(b) extracts software version information from the one or more software packages
and stores the software version information in the local persistent storage,

(c) reboots and executes the boot image stored in the local persistent storage, and

(d) verifies the software version information with said master node;

means for the master node retrieving, if said node does not have the correct software
versions, correct software packages from the first storage and sending the correct
software packages to said node, wherein said node stores the correct software
packages in the local persistent storage and completes booting by executing the
correct software packages stored in the local persistent storage.

33. (canceled)

34. (previously presented) An apparatus as recited in Claim 32, wherein said node, based on a command from said master node, does not store the one or more software packages in its local persistent storage device, allowing said master node to download test software packages to said node and temporarily run said node using the test software packages, and wherein when said node reboots, the test software packages will no longer exist on said node.
35. (canceled)
36. (currently amended) An apparatus as recited in Claim ~~[[35]]~~ 32, wherein if said node has the correct software versions, then said node completes booting by executing the one or more software packages stored in the local persistent storage.
37. (canceled)
38. (previously presented) An apparatus as recited in Claim 32, wherein the master node has the ability to categorize nodes into classes where all of the nodes in a particular class of nodes have the same software configuration and may have differing processor types.
39. (previously presented) An apparatus as recited in Claim 32, wherein each of the one or more software packages contains version information, dependency information, and other metadata information pertaining to software in the package.

40. (previously presented) An apparatus as recited in Claim 32, wherein the boot image is customized for a particular type of node and provides basic low-level communications.
41. (previously presented) An apparatus as recited in Claim 32, further comprising:
means for executing a composite image to create a subset of the plurality of boot images,
a subset of the plurality of software packages, and node information; and
means for placing the subset of the plurality of boot images and the subset of the plurality of software packages in the first storage and the node information in the second storage.
42. (previously presented) An apparatus as recited in Claim 32, wherein said means for the master node retrieving the software version information creates the software version information from the second storage based on functional features included in the request.
43. (currently amended) A system for software loading and initialization in a distributed network of nodes, the system comprising:
a master node;
a node in the distributed network;
a first storage on the master node, wherein the first storage persistently stores a plurality of boot images and a plurality of software packages that nodes in the distributed network will use;
a second storage on the master node, wherein the second storage persistently stores software version information and node type information for each node in the distributed network;

one or more processors on the master node;

one or more sequences of instructions which, when executed by the one or more

processors, cause the one or more processors to perform:

receiving a request for a boot image and software packages from the node that is
performing an initial boot;

based on the request, the master node determining software version information of
the node to retrieve from the second storage;

the master node retrieving the software version information of the node from the
second storage;

the master node determining, based on the software version information of the
node, a boot image of the plurality of boot images and one or more
software packages of the plurality of software packages to extract from the
first storage;

the master node extracting the boot image and the one or more software packages
from the first storage; [[and]]

delivering, to the node, the boot image and the one or more software packages;

retrieving correct software packages from the first storage and sending the correct
software packages to the node if the node does not have the correct
software versions;

one or more other processors on the node;

one or more other sequences of instructions which, when executed by the one or more

other processors, cause the one or more other processors to perform:

storing the boot image and the one or more software packages in local persistent
storage of the node;

extracting software version information from the software packages;
storing the software version information in the local persistent storage;
executing the boot image, that is stored in the local persistent storage, to reboot
the node;
verifying the software version information with the master node;
in response to receiving the correct software packages from the master node,
storing the correct software packages in the local persistent storage and
executing the correct software packages stored in the local persistent
storage to complete booting.

44. (previously presented) A system as recited in Claim 43, wherein the node, based on a command from said master node, does not store the software packages in the local persistent storage device, allowing said master node to download test software packages to said node and temporarily run said node using the test software packages, and wherein when said node reboots, the test software packages will no longer exist on said node.
45. (canceled)
46. (currently amended) A system as recited in Claim ~~[[45]]~~ 43, wherein the one or more other sequences of instructions which, when executed by the one or more other processors, further cause the one or more other processors to perform executing the one or more software packages stored in the local persistent storage to complete booting if the node has the correct software versions.

47. (canceled)
48. (previously presented) A system as recited in Claim 43, wherein the master node has the ability to categorize nodes into classes where all of the nodes in a particular class of nodes have the same software configuration and may have differing processor types.
49. (previously presented) A system as recited in Claim 43, wherein each of the one or more software packages contains version information, dependency information, and other metadata information pertaining to software in the package.
50. (previously presented) A system as recited in Claim 43, wherein the boot image is customized for a particular type of node and provides basic low-level communications.
51. (previously presented) A system as recited in Claim 43, wherein the one or more sequences of instructions which, when executed by the one or more processors, further cause the one or more processors to perform:
- executing a composite image, that a user installs on the master node, to create a subset of the plurality of boot images, a subset of the plurality of software packages, and node information; and
- placing the subset of the plurality of boot images and the subset of the plurality of software packages in the first storage and the node information in the second storage.

52. (previously presented) A system as recited in Claim 43, wherein the master node retrieving the software version information creates the software version information from the second storage based on functional features included in the request.
53. (currently amended) A method as recited in Claim [[1]] 10, wherein:
the request includes node type information of the node;
the master node determining software version information of the node includes the master node using the node type information of the node to determine the software version information of the node.
54. (previously presented) A computer-readable storage medium as recited in Claim 21, wherein:
the request includes node type information of the node;
the master node determining software version information of the node includes the master node using the node type information of the node to determine the software version information of the node.
55. (previously presented) An apparatus as recited in Claim 32, wherein:
the request includes node type information of the node;
the means for the master node determining software version information of the node includes means for the master node using the node type information of the node to determine the software version information of the node.

56. (previously presented) A system as recited in Claim 43, wherein:
- the request includes node type information of the node;
- the master node determining software version information of the node includes the master node using the node type information of the node to determine the software version information of the node.